Chapter 26 Summary of CoS Configuration Statements

The following sections explain each of the CoS configuration statements. The statements are organized alphabetically.

buffer-size

Syntax buffer-size (percent *percentage* | remainder);

Hierarchy Level [edit class-of-service schedulers *scheduler-name*]

 $\label{eq:Description} \textbf{Description} \qquad \text{Specify buffer size as a percentage.}$

Options *percentage*—Buffer size as a percentage of total buffer.

remainder—Remaining buffer available.

Usage Guidelines See "RED Congestion Control" on page 417 and "Configure Scheduling Policy Maps" on

page 429.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

class

Syntax class class-name { classification-override {

forwarding-class *class-name*;

}

Hierarchy Level [edit class-of-service forwarding-policy]

Description Configure CoS-based forwarding class.

Options *class-name*—Name of the routing policy class.

The remaining statements are explained separately.

Usage Guidelines See "CoS Configuration Guidelines" on page 419.

Required Privilege Level interface—To view this statement in the configuration.

 $interface\hbox{-}control\hbox{--} To add this statement to the configuration.$

```
class-of-service
```

Syntax class-of-service { ... }

Hierarchy Level [edit]

Description Configure JUNOS CoS features.

transmission queue 0.

Usage Guidelines See "CoS Configuration Guidelines" on page 419.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

classification-override

```
Syntax classification-override {
          forwarding-class class-name;
}
```

Hierarchy Level [edit class-of-service forwarding-policy class class-name]

Description For IPv4 packets, override the incoming packet classification, assigning all packets sent to a

destination prefix to the same output transmission queue.

Usage Guidelines See "Configure CoS-Based Forwarding" on page 433.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

See Also policy-statement in the *JUNOS Internet Softw are Configur ation Guide: R outing and R outing*

Protocols

classifiers

Hierarchy Level [edit class-of-service]

Description Define a CoS aggregate behavior classifier for classifying packets. You can associate the

classifier with a forwarding class or code-point mapping, and import a default classifier or

one that is previously defined.

Options *classifier-name*—Name of the aggregate behavior classifier.

```
type—Traffic type.
                                Values: dscp, exp, ieee-802.1, inet-precedence
                           The remaining statements are explained separately.
                           See "Classify Packets by Behavior Aggregate" on page 427.
        Usage Guidelines
  Required Privilege Level
                           interface—To view this statement in the configuration.
                           interface-control—To add this statement to the configuration.
code-point
                           code-point [ alias | bits ];
                  Syntax
                           [edit class-of-service rewrite-rules type rewrite-name forwarding-class class-name]
          Hierarchy Level
                           Specify one or more DSCP code-point aliases or bit sets for association with a forwarding
              Description
                           alias-Name of the DSCP alias.
                 Options
                           bits—Value of the code-point bits, in binary code.
        Usage Guidelines
                           See "Rewrite Packet Header Information" on page 431.
                           interface—To view this statement in the configuration.
  Required Privilege Level
                           interface-control—To add this statement to the configuration.
code-point-aliases
                           code-point-aliases {
                  Syntax
                                type {
                                     alias-name bits;
                           }
          Hierarchy Level
                           [edit class-of-service]
                           Define an alias for a DSCP bit set.
              Description
                           alias-name—Name of the DSCP alias.
                 Options
                           bits—Six-bit value of the code-point bits, in binary code.
                            type—Traffic type.
                                Values: dscp, exp, ieee-802.1, inet-precedence
                           See "Define Code-Point Aliases" on page 422.
        Usage Guidelines
   Required Privilege Level
                           interface—To view this statement in the configuration.
```

code-points

Syntax code-points [alias | bits];

Hierarchy Level [edit class-of-service classifiers type classifier-name forwarding-class class-name]

Description Specify one or more DSCP code-point aliases or bit sets for association with a forwarding

class

Options alias—Name of the DSCP alias.

bits—Value of the code-point bits, in binary code.

Usage Guidelines See "Classify Packets by Behavior Aggregate" on page 427.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

drop-probability

drop-probability percentage

Syntax drop-probability *percentage*;

Hierarchy Level [edit class-of-service drop-profiles profile-name]

Description Define drop probability percentage.

Options percentage—Probability that a packet will be dropped, expressed as a percentage. A value of

0 means that a packet will never be dropped, and a value of 100 means that all packets

will be dropped.

Range: 0 through 100 percent

Usage Guidelines See "Configure RED Drop Profiles" on page 430.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

drop-probability interpolated value

Syntax drop-probability value;

Hierarchy Level [edit class-of-service drop-profile profile-name interpolate]

Description Define up to 64 values for interpolating drop probabilities.

Options *value*—Data point for interpolated packet drop probability.

Range: 0 through 100

Usage Guidelines See "Configure RED Drop Profiles" on page 430.

Required Privilege Level interface—To view this statement in the configuration.

drop-profile

Syntax drop-profile *profile-name*;

Hierarchy Level [edit class-of-service schedulers scheduler-name drop-profile-map loss-priority (low | high |

any) protocol (any | non-tcp | tcp)]

Description Define drop profiles for RED. RED periodically examines each queue and the packet at the

head of the queue. If the congestion level on the queue corresponds to a nonzero drop

probability, RED decides whether to drop the packet at the head of the queue.

Options *profile-name*—Name of the drop profile.

Usage Guidelines See "Configure Scheduling Policy Maps" on page 429.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

drop-profile-map

Syntax drop-profile-map loss-priority (low | high) protocol (non-tcp | tcp | any)

drop-profile profile-name;

Hierarchy Level [edit class-of-service schedulers scheduler-name]

Description Define loss priority value for drop profile.

Options The statements are explained separately.

Usage Guidelines See "Configure Scheduling Policy Maps" on page 429.

Required Privilege Level interface—To view this statement in the configuration.

drop-profiles

Hierarchy Level [edit class-of-service]

Description Define drop profiles for RED.

For a packet to be dropped, it must match the drop profile. RED periodically examines each queue and the packet at the head of the queue. If the congestion level on the queue corresponds to a nonzero drop probability, RED decides whether to drop the packet at the head of the queue.

Options *profile-name*—Name of the drop profile.

The remaining statements are explained separately.

Usage Guidelines See "Configure RED Drop Profiles" on page 430.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

fill-level

fill-level percentage

Syntax fill-level percentage;

Hierarchy Level [edit class-of-service drop-profiles profile-name]

Description When configuring RED, map the fullness of a queue to a drop probability.

Options percentage—How full the queue is, expressed as a percentage. To specify multiple fill levels,

include multiple fill-level options. List the fill levels incrementally in increasing order.

Range: 0 through 100 percent

Usage Guidelines See "Configure RED Drop Profiles" on page 430.

Required Privilege Level interface—To view this statement in the configuration.

fill-level interpolated value

Syntax fill-level value;

Hierarchy Level [edit class-of-service drop-profile profile-name interpolate]

Description Define up to 64 values for interpolating queue fill level.

Options *value*—Data point for mapping queue fill percentage.

Range: 0 through 100

Usage Guidelines See "Configure RED Drop Profiles" on page 430.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

forwarding-class

forwarding-class, classifiers

Syntax forwarding-class class-name {

loss-priority (low \mid high) code-points [$alias \mid bits$];

}

Hierarchy Level [edit class-of-service classifiers type classifier-name]

Description Define forwarding class name and option values.

Options *class-name*—Name of forwarding class.

The remaining statements are explained separately.

Usage Guidelines See "Classify Packets by Behavior Aggregate" on page 427.

Required Privilege Level interface—To view this statement in the configuration.

forwarding-class, forwarding policy

Syntax forwarding-class *class-name* {

next-hop [next-hop-name];

lsp-next-hop [lsp-regular-expression];

}

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map map-name]

Description Define forwarding class name and associated next hops.

Options *class-name*—Name of forwarding class.

The remaining statement is explained separately.

Usage Guidelines See "Configure CoS-Based Forwarding" on page 433.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

forwarding-classes

Syntax forwarding-classes {

queue queue-number class-name priority (low | high);

}

Hierarchy Level [edit class-of-service]

Description Associate forwarding class with queue name and number. For T-series platforms only, you

can configure fabric priority queueing by including the priority statement at the [edit class-of-service forwarding-classes queue *queue-number class-name*] hierarchy level.

Options The remaining statements are explained separately.

Usage Guidelines See "Configure Forwarding Classes" on page 425 and "Override Fabric Priority Queuing" on

page 427.

Required Privilege Level interface—To view this statement in the configuration.

forwarding-policy Syntax forwarding-policy { next-hop-map map-name { forwarding-class class-name { next-hop [next-hop-name]; Isp-next-hop [Isp-regular-expression]; class class-name { classification-override { forwarding-class class-name; } [edit class-of-service] **Hierarchy Level** Description Define CoS-based forwarding policy options. The remaining statements are explained separately. **Options** See "Configure CoS-Based Forwarding" on page 433. **Usage Guidelines** Required Privilege Level interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

import

import classifiers

Syntax import (classifier-name | default);

Hierarchy Level [edit class-of-service classifiers type classifier-name]

Description Specify a default or previously defined classifier to import.

Options classifier-name—Name of previously defined classifier mapping.

default—The default classifier mapping.

Usage Guidelines See "Classify Packets by Behavior Aggregate" on page 427.

Required Privilege Level interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

import rewrite-rules

Syntax import (rewrite-name | default);

Hierarchy Level [edit class-of-service rewrite-rules *type rewrite-name*]

Description Specify a default or previously defined rewrite-rules mapping to import.

Options rewrite-name—Name of previously defined rewrite-rules mapping.

default—The default rewrite-rules mapping.

Usage Guidelines See "Rewrite Packet Header Information" on page 431.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

interfaces

```
Syntax interfaces {
    interface-name {
        scheduler-map map-name;
        unit logical-unit-number {
            classifiers {
                 type (classifier-name | default);
            }
            forwarding-class class-name;
            rewrite-rules {
                 type (rewrite-name | default);
            }
        }
     }
}
```

Hierarchy Level [edit class-of-service]

Description Configure interface-specific CoS properties for incoming packets. Associate forwarding-class

definition and RED mapping with an interface on the router.

Options *interface-name*—Name of the interface.

The remaining statements are explained separately.

Usage Guidelines See "Classify Packets by Behavior Aggregate" on page 427 and "Rewrite Packet Header

Information" on page 431.

Required Privilege Level interface—To view this statement in the configuration.

interpolate

Syntax interpolate { fill-level value:

drop-probability value;

}

Hierarchy Level [edit class-of-service drop-profiles profile-name]

Description Specify values for interpolating relationship between queue fill level and drop probability.

Options The remaining statements are explained separately.

Usage Guidelines See "Configure RED Drop Profiles" on page 430.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

loss-priority

Syntax loss-priority (low | high | any);

Hierarchy Level [edit class-of-service classifiers type classifier-name forwarding-class class-name],

[edit class-of-service schedulers scheduler-name drop-profile-map]

Description Specify packet loss priority value.

Options any—Use any loss priority.

low—Packet has low loss priority.

high—Packet has high loss priority.

Usage Guidelines See "Classify Packets by Behavior Aggregate" on page 427.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

Isp-next-hop

Syntax Isp-next-hop [Isp-regular-expression];

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map map-name forwarding-class

class-name]

Description Specify the LSP regular expression to which to map forwarded traffic.

Options *Isp-regular-expression*—Next-hop LSP label.

Usage Guidelines See "Configure CoS-Based Forwarding" on page 433.

Required Privilege Level interface—To view this statement in the configuration.

next-hop

Syntax next-hop [next-hop-name];

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map map-name forwarding-class

class-name]

Description Specify the next-hop name or address to which to map forwarded traffic.

Options *next-hop-name*—Next-hop alias or IP address.

Usage Guidelines See "Configure CoS-Based Forwarding" on page 433.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

next-hop-map

```
Syntax next-hop-map map-name {
    forwarding-class class-name {
        next-hop next-hop-name;
        Isp-next-hop [ Isp-regular-expression ];
    }
}
```

Hierarchy Level [edit class-of-service forwarding-policy]

Description Specify the map for CoS forwarding routes.

Options *map-name*—Map that defines next-hop routes.

Usage Guidelines See "Configure CoS-Based Forwarding" on page 433.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

priority

Syntax priority (low | high | strict-high);

Hierarchy Level [edit class-of-service schedulers scheduler-name],

[edit class-of-service forwarding-classes queue queue-number]

Description Specify packet priority value.

For T-series platforms only, you can configure fabric priority queueing by including the priority statement at the [edit class-of-service forwarding-classes queue $\it queue-number$

class-name] hierarchy level.

Options low—Scheduler or forwarding class's fabric queuing has low priority.

high—Scheduler or forwarding class's fabric queuing has high priority.

strict-high—Scheduler has strictly high priority. The queue receives precedence over all high-and low-priority queues, as long as strictly high-priority traffic is waiting to be sent, irrespective of the strictly high-priority queue's bandwidth credit. The strict-high option is available at [edit class-of-service schedulers *scheduler-name* priority] hierarchy level only.

Usage Guidelines See "Configure Scheduling Policy Maps" on page 429 and "Override Fabric Priority Queuing"

on page 427.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

See Also forwarding-classes on page 448

protocol

Syntax protocol (non-tcp | tcp | any);

Hierarchy Level [edit class-of-service schedulers scheduler-name drop-profile-map]

Description Specify the protocol type for the specified scheduler.

Options any—Accept any protocol type.

non-tcp—Accept any protocol type other than TCP-IP.

tcp—Accept only TCP/IP protocol.

Usage Guidelines See "Configure Scheduling Policy Maps" on page 429.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

queue

Syntax queue queue-number class-name;

Hierarchy Level [edit class-of-service forwarding classes]

Description Specify the output transmission queue to which to map all input from an associated

forwarding class.

Options *class-name*—Name of forwarding class.

queue-number—Output queue number.

Range: 0 through 65,535

Usage Guidelines See "Configure Forwarding Classes" on page 425.

Required Privilege Level interface—To view this statement in the configuration.

rewrite-rules

Hierarchy Level [edit class-of-service]

Description Specify the rewrite-rules mapping for the entire traffic stream that passes through all queues

on the interface.

Options rewrite-name—Name of the rewrite-rules mapping.

type—Traffic type.

Values: dscp, exp, inet-precedence

The remaining statements are explained separately.

Usage Guidelines See "Rewrite Packet Header Information" on page 431.

Required Privilege Level interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

rewrite-rules, interfaces

Hierarchy Level [edit class-of-service interfaces interface-name unit logical-unit-number]

Description Associate a rewrite-rules configuration or default mapping with a specific interface.

Options rewrite-name—Name of the rewrite-rules mapping.

default—The default mapping.

Usage Guidelines See "Rewrite Packet Header Information" on page 431.

Required Privilege Level interface—To view this statement in the configuration.

scheduler Syntax scheduler scheduler-name; **Hierarchy Level** [edit class-of-service scheduler-maps map-name] Description Associate a scheduler with a scheduler map. scheduler-name—Name of the scheduler configuration block. **Options Usage Guidelines** See "Configure Scheduling Policy Maps" on page 429. Required Privilege Level interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. scheduler-map scheduler-map map-name; **Syntax Hierarchy Level** [edit class-of-service interfaces interface-name] Description Associate a scheduler map name with an interface. **Options** map-name—Name of the scheduler map. See "Configure Scheduling Policy Maps" on page 429. **Usage Guidelines** interface—To view this statement in the configuration. Required Privilege Level interface-control—To add this statement to the configuration. scheduler-maps Syntax scheduler-maps { map-name { forwarding-class class-name scheduler scheduler-name; } **Hierarchy Level** [edit class-of-service] Description Specify scheduler map name and associate it with the scheduler configuration and forwarding class. map-name—Name of the scheduler map. **Options** The remaining statements are explained separately. **Usage Guidelines** See "Configure Scheduling Policy Maps" on page 429.

interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

Required Privilege Level

schedulers

```
Syntax schedulers {
                             scheduler-name {
                                  buffer-size (seconds | percent percentage | remainder);
                                  drop-profile-map loss-priority (low | high ) protocol (non-tcp | tcp | any)
                                         drop-profile profile-name;
                                  priority (low | high | strict-high);
                                  transmit-rate (rate | percent percentage | remainder | exact);
                             }
                         }
       Hierarchy Level
                         [edit class-of-service]
           Description
                         Specify scheduler name and parameter values.
                         scheduler-name—Name of the scheduler to be configured.
               Options
                         The remaining statements are explained separately.
     Usage Guidelines
                         See "Configure Scheduling Policy Maps" on page 429.
Required Privilege Level
                        interface—To view this statement in the configuration.
                         interface-control—To add this statement to the configuration.
```

transmit-rate

transmit-rate (rate | percent percentage | remainder | exact); Syntax **Hierarchy Level** [edit class-of-service schedulers scheduler-name] Description Specify the transmit rate or percentage for a scheduler. **Options** exact—Enforce the exact transmission rate. rate—Transmission rate, in bits per second. remainder—Use remaining rate available. percent percentage—Transmission percentage. Range: 0 through 100 percent

See "Configure Scheduling Policy Maps" on page 429. **Usage Guidelines**

Required Privilege Level interface—To view this statement in the configuration.

unit

Hierarchy Level [edit class-of-service interfaces interface-name]

Description Configure a logical interface on the physical device. You must configure a logical interface to

be able to use the physical device.

Options *logical-unit-number*—Number of the logical unit.

Range: 0 through 16384

The remaining statements are explained separately.

Usage Guidelines See "Classify Packets by Behavior Aggregate" on page 427 or "Rewrite Packet Header

Information" on page 431.

Required Privilege Level interface—To view this statement in the configuration.

 $interface \hbox{-} control \hbox{--} To add this statement to the configuration. \\$

458